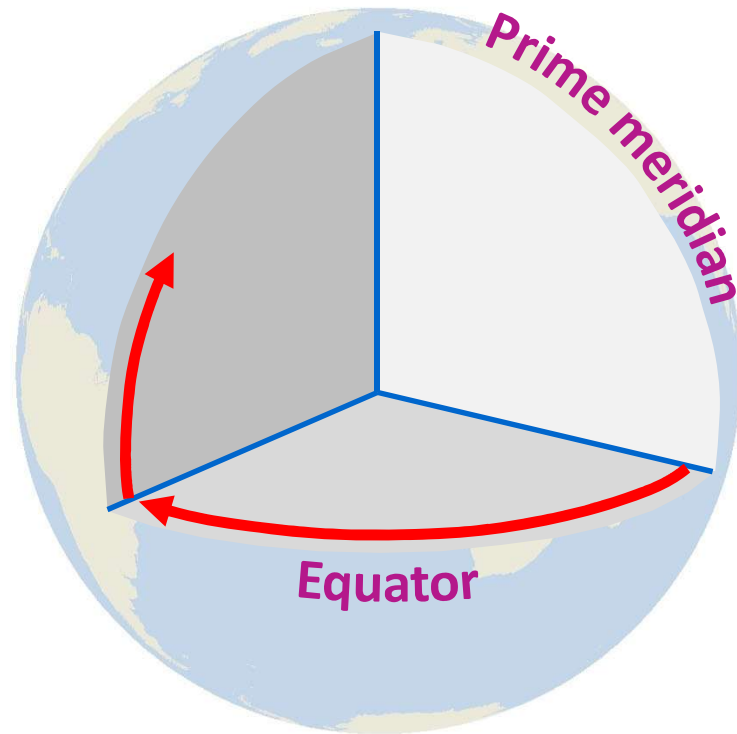




Longitude and latitude



How do we describe a location?

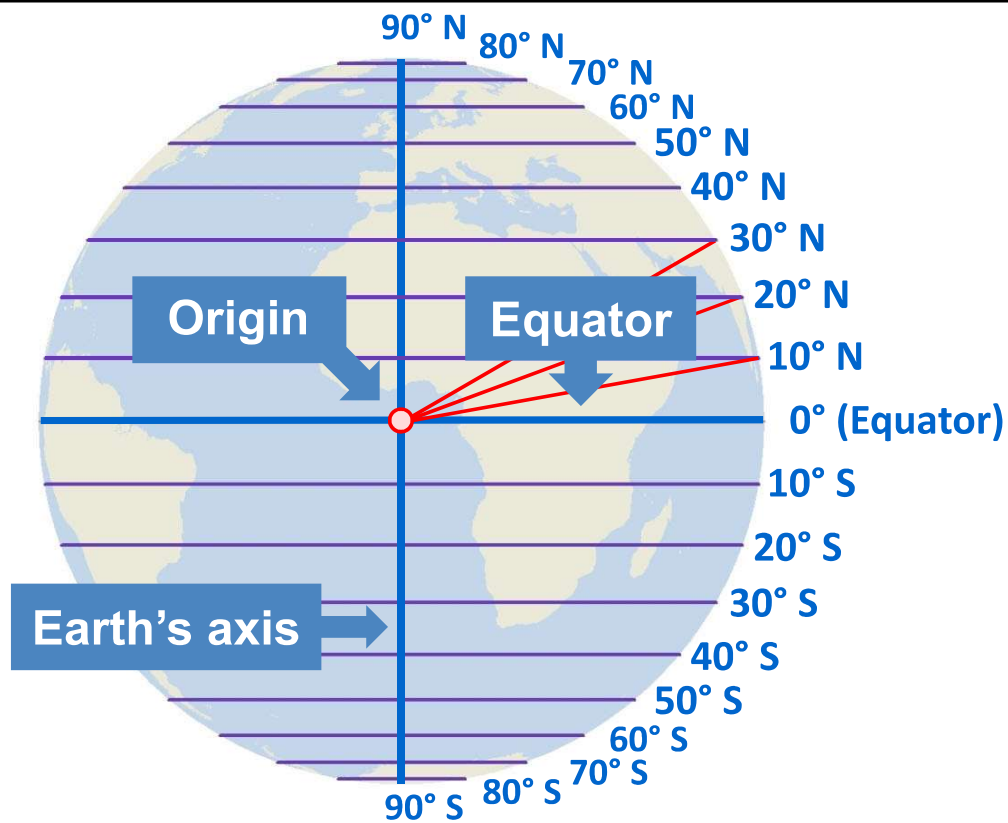


(adapted from Kimmerling *et al.*, 2009)

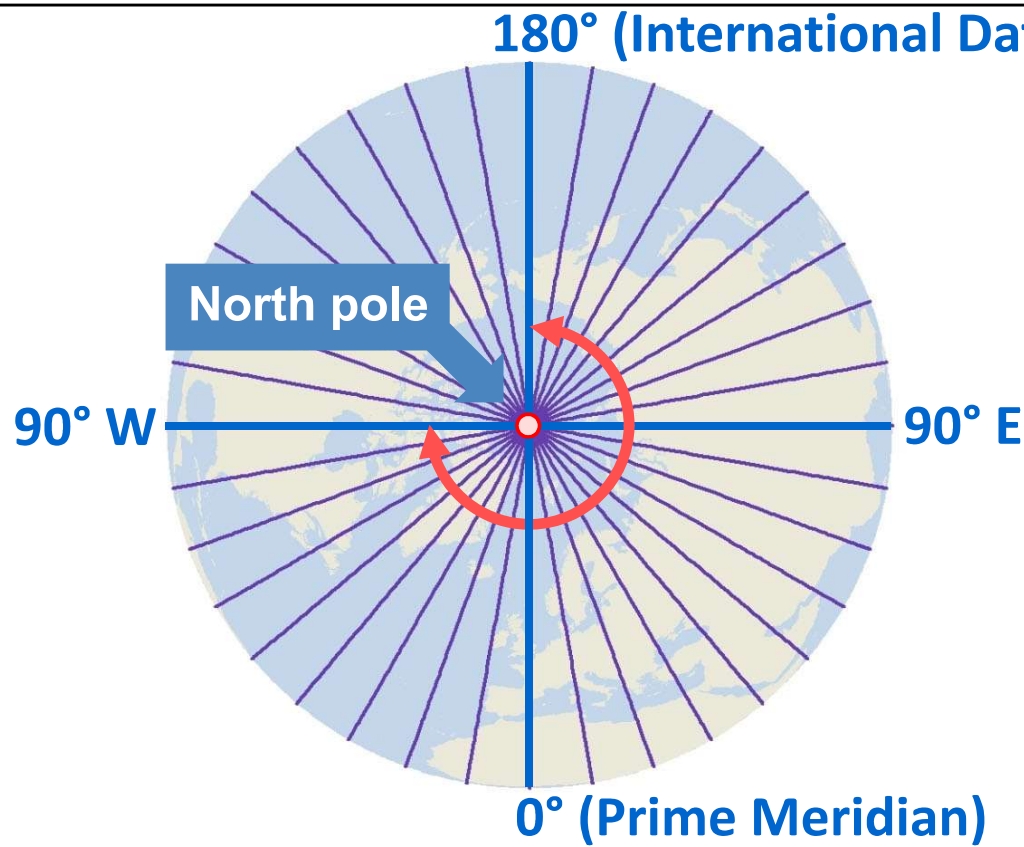
Angular unit of measure



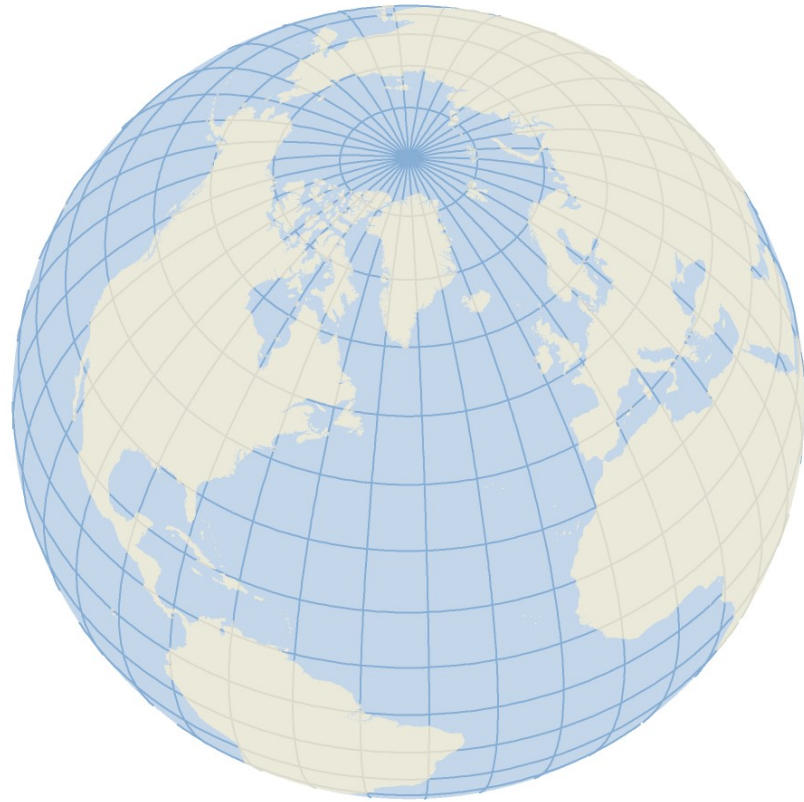
Longitude and latitude



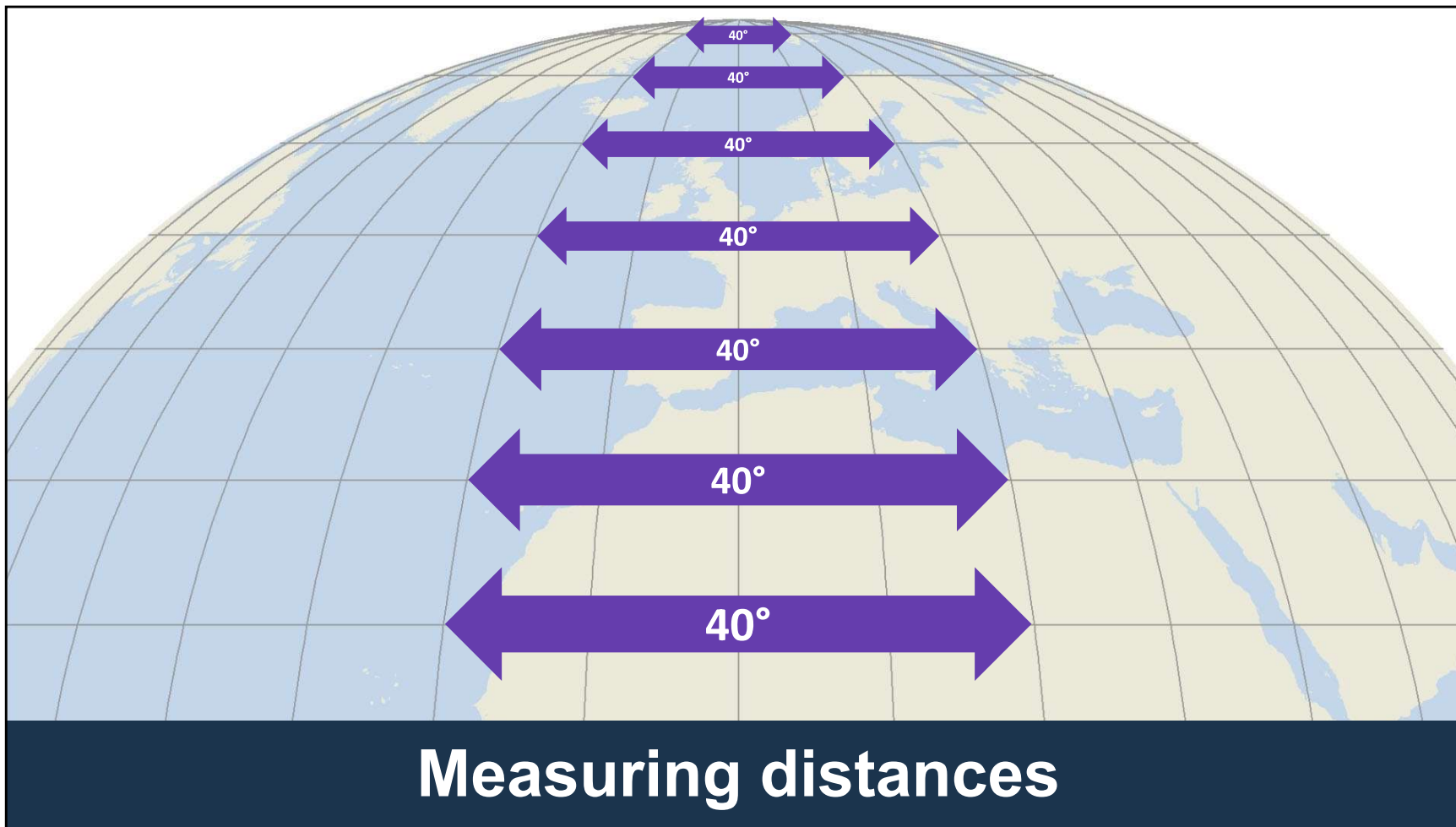
Latitude (parallels)



Longitude (meridians)



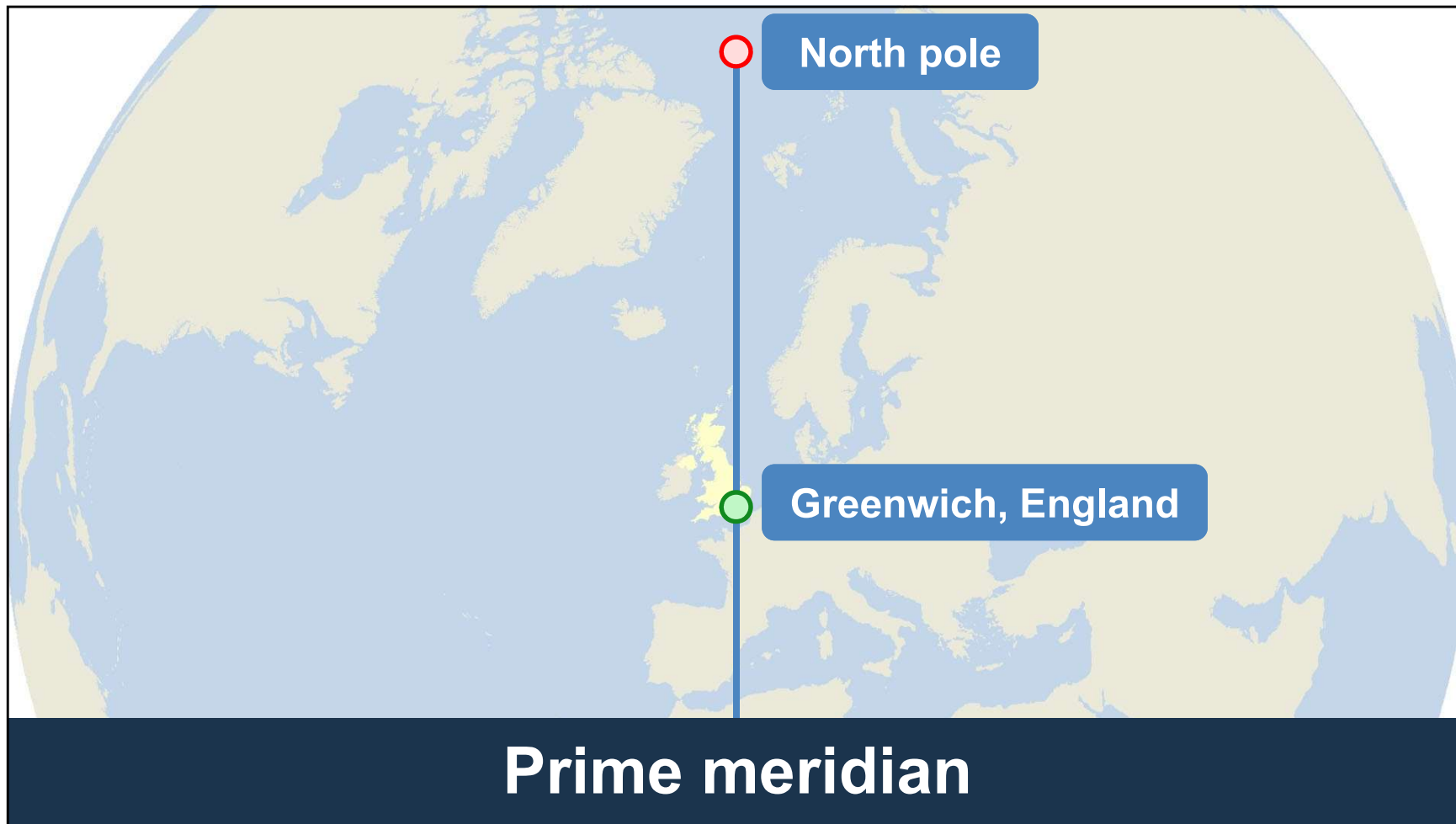
Graticule



Royal Observatory

Defining the prime meridian





Why Greenwich?

- Chosen in 1884
- Was already basis for U.S. time zones, most sea charts



Royal Observatory



Where in Greenwich?



Photomechanical print after Lock & Whitfield



Airy Transit Circle

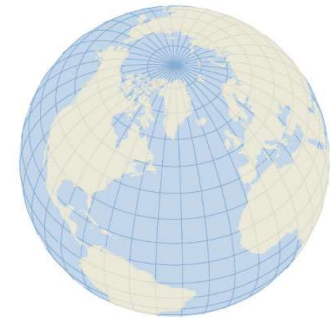


Where in the Observatory?



Long/Lat Coordinates

- Sexagesimal (base 60) system
- Degrees, Minutes, Seconds (DMS)
 - ◆ e.g. $142^{\circ} 32' 23''$



1 degree = 60 minutes

1 minute = 60 seconds.

Home ▾ My Map New Map ▾ Don ▾

Details Add ▾ Basemap Analysis Save Share Print Directions Measure Bookmarks Eiffel Tower, 5 Avenue Anatole France 75007 Paris

Find area, length, or location

DMS

Measurement Result

Longitude	Latitude
2°17'40.34"	48°51'29.68"
2°17'40.34"	48°51'29.68"

Find area, length, or location

Degrees

Measurement Result

Longitude	Latitude
2.294538	48.858243
2.294538	48.858243

Recording coordinates

Home ▾ My Map New Map ▾ Don ▾

Details Add ▾ Basemap Analysis Save Share Print Directions Measure Bookmarks Eiffel Tower, 5 Avenue Anatole France 75007 Paris

Find area, length, or location

DMS ▾

Measurement Result

Longitude	Latitude
2°17'40.34"	48°51'29.68"
2°17'40.34"	48°51'29.68"

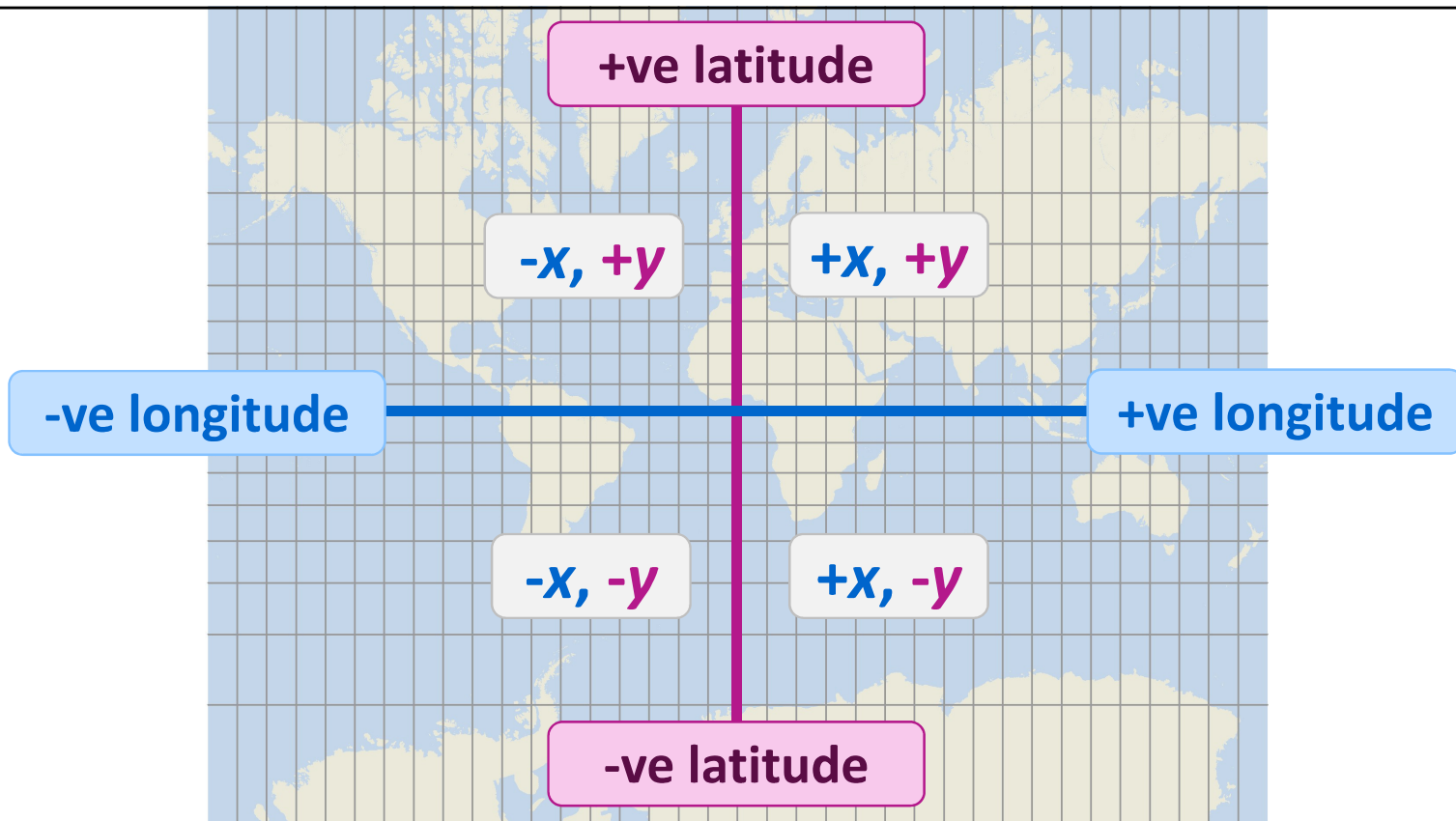
Find area, length, or location

Degrees ▾

Measurement Result

Longitude	Latitude
2.294538	48.858243
2.294538	48.858243

Recording coordinates



Decimal degree signs

Eiffel Tower:
2.2945272, 48.8582680
(longitude, latitude)

www.arcgis.com/home/webmap/viewer.html
www.arcgis.com/home/webmap/viewer.html?¢er=2.2945272,48.8582680
www.arcgis.com/home/webmap/viewer.html?¢er=2.2945272,48.8582680&level=8
www.arcgis.com/home/webmap/viewer.html?¢er=2.2945272,48.8582680&level=8&mapOnly=true

121° 8' 6"

Converting DMS/DD coordinates

$$= 121 + (8/60) + (6/3600)$$

$$= 121.135$$

121° 8' 6"

$$= D + (M/60) + (S/3600)$$

$$= 121 + (8/60) + (6/3600)$$

$$= 121.135$$

Degrees, Minutes, Seconds → Decimal Degrees

121°135

$$.135 \times 60 = 8.1$$

$$.1 \times 60 = 6$$

121° 8' 6"

Decimal degrees → Degrees, minutes, seconds